Site file 1.4

FIELD INVESTIGATIONS OF UNCONTROLLED HAZARDOUS WASTE SITES

FIT PROJECT

TASK REPORT TO THE ENVIRONMENTAL PROTECTION AGENCY CONTRACT NO. 68-01-6056

[redacted]

D-1 (copy)

062100

FIELD INVESTIGATIONS OF UNCONTROLLED HAZARDOUS WASTE SITES

FIT PROJECT

TASK REPORT TO THE ENVIRONMENTAL PROTECTION AGENCY CONTRACT NO. 68-01-6056

WESTERN PROCESSING COMPANY, INC.
KENT, WASHINGTON

PRELIMINARY ASSESSMENT REPORT

TDD 10-8203-04

REGION X

MAY 1982

ecology and environment, inc.

International Specialists in the Environmental Sciences

recycled paper

ecology and environment

063100

ABSTRACT

Western Procesing Company, Inc., Kent, Washington, which began operations in 1957, has Interim Status under the Resource Conservation and Recovery Act (RCRA) as a storer of hazardous waste materials. The company is currently negotiating with state and local government agencies in order to come in compliance with their regulations. It is proposed that ground-water and surface water quality be monitored to determine past and present waste disposal activities.

TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

1.0 INTRODUCTION

Western Processing Company, Inc., which began operations in 1957 as an animal by-product/brewer's yeast reprocessor, is an active recycler and reclaimer of hazardous waste materials. The company has Interim Status as a storage facility for hazardous materials under the Resource Conservation and Recovery Act (RCRA). Western Processing currently is not operating under any state and local waste discharge permits.

Recent surface water samples collected near the site by both the Washington State Department of Ecology (DOE) and the Municipality of Metropolitan Seattle (METRO) show elevated heavy metal, pH, and specific conductance levels, apparently from contaminants seeping from the site.

TDD 10-8203-04 requires the Field Investigation Team (FIT) of Ecology and Environment, Inc., to investigate Western Processing to obtain data necessary to evaluate past and present site activities. This data would also help to determine if Western Processing is complying with Federal, State, and Local regulations concerning the disposal of hazardous materials.

A number of interviews and meetings were conducted with Federal, State, and Local public health officials in an attempt to determine which environmental regulations are necessary for Western Processing's continued operation. Pertinent files were searched extensively. A detailed study of aerial photographs of the site from 1960 to 1980 was carried out to ascertain changes in site activities over the years.

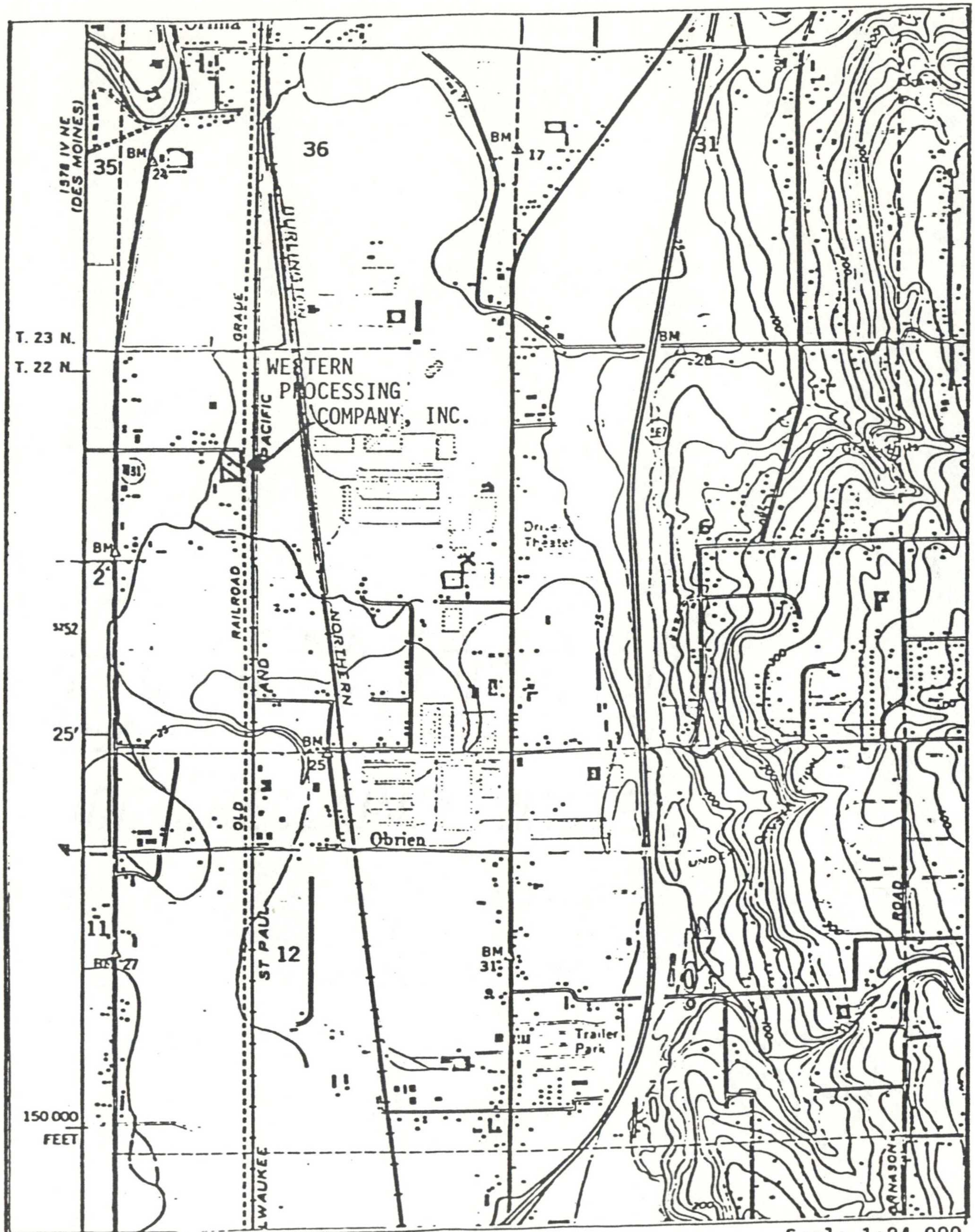
2.0 PHYSICAL DESCRIPTION

2.1 LOCATION AND SITE PLAN

Western Processing Company, Inc., is entirely within section 1, Township 22N, Range 4E, near the junction of West Valley Road and South 196th Street in Kent, Washington, in King County. The street address is 7215 South 196th Street. The site is at latitude 47°25'31"N., longitude 122°14'31"W.

Western Processing is located about four miles north of downtown Kent and about a mile southeast of the Green River (see Fig. 1). The area around Western Processing is mostly commercial. The owner of the company is Garmt J. Nieuwenhuis; the company president is (b) (6) [redacted] Luurt Nieuwenhuis.

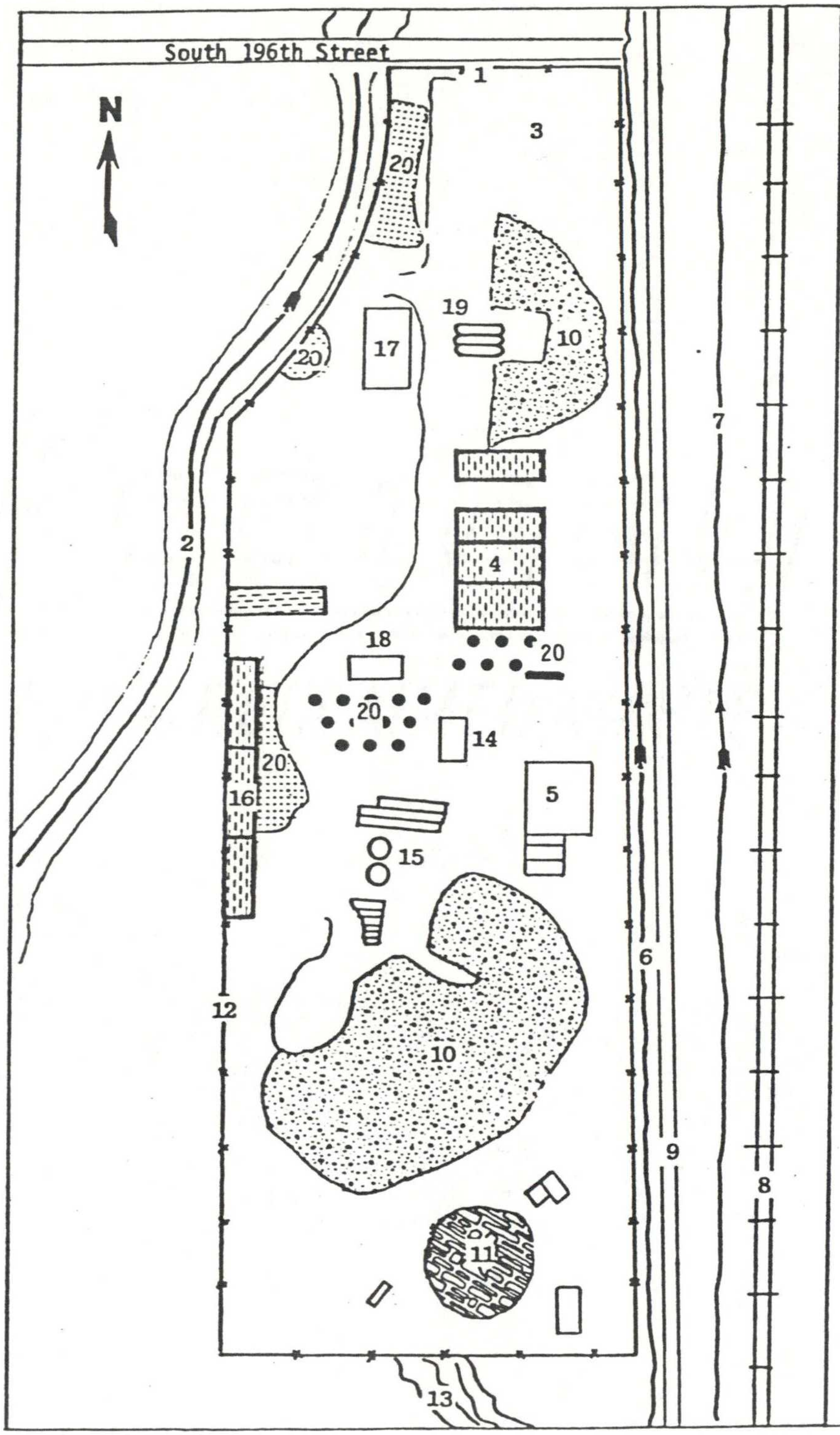
Western Processing Company, Inc., occupies approximately 13 acres. The site facility (see Fig. 2) consists of a small laboratory, a chemical recycling facility, drum storage areas, a fertilizer plant, bulk storage tanks containing reclaimed solvents, above-ground storage lagoons for liquid wastes, cooling water, and surface water collected from sump pumps, piles of flue dust, and construction debris. The King County drainage ditch #1 (also known as Mill Creek) runs adjacent to the northwest corner of the site; a powerline drainage ditch and a railroad drainage ditch runs north/south along the eastern property boundary. Both ditches flow into the county drainage ditch on a seasonal basis (Brenner, 1982). The Burlington Northern railroad line also runs north/south along the eastern site boundary. Western Processing receives its drinking water and process water from the City of Kent.



USGS 1949

Scale 1:24,000

FIGURE 1
LOCATION MAP
WESTERN PROCESSING COMPANY, INC.
KENT, WASHINGTON



KEY:

(1) Main gate

(2) King County drainage ditch # 1

(3) Fill material

(4) Storage lagoons for acid/caustic/cyanide wastes

(5) Fertilizer/exoskeleton plant

(6) Powerline drainage ditch

(7) Railroad drainage ditch

(8) Burlington Northern railroad tracks

(9) Public jogging track

(10) Foundry sand

(11) Scrap metal/construction debris

(12) Cyclone fence

(13) Water recharge area with dikes/berm

(14) Solvent recovery plant with storage area

(15) Bulk storage tanks

(16) Cooling water lagoons

(17) Chlorine gas tank storage house

(18) Laboratory

(19) Naphtha storage tanks

(20) 55-gallon drum storage area

developed from aerial photograph

scale: 1" = 200'

FIGURE 2
SITE PLAN
WESTERN PROCESSING COMPANY, INC.

2.2 CLIMATE AND WATER BUDGET

The climate of the general area is mild, with wet winters and relatively dry summers. The average annual temperature is about 52°F with a high average monthly temperature in July of about 65°F and a low in January of about 40°F. Precipitation is about 33 inches a year; about 75 percent of this occurs from October through March (Mullineaux, 1970).

Although water balance is negative during the summer, there is a positive water balance from October to March with an overall positive water balance of about 9 inches.

2.3 GEOLOGY

The Western Processing plant is located on the flood plain of the Duwamish River at a mean sea level elevation of about 20 feet. The subsurface material of the general area consists of sand, silt and clay. This material forms part of the post-glacial alluvium laid down by the Green and White rivers. The Western Processing site itself is underlain by silt and sand of post-glacial origin (Sceva, 1982). Below these sediments are sand and gravels of Pleistocene age (Mullineaux, 1970).

2.4 HYDROLOGY

Ground-water in the alluvial plain in the general area occurs both under water-table and artesian conditions. The water-table aquifer lies close to the surface, and is encountered within 10-feet of land surface at the Western Processing site. The water-table aquifer is recharged by percolation from the surface, and discharges to ditches and streams that eventually join the Duwamish River.

The artesian aquifer, which is the major source of drinking water in the area, lies below confining layers of silt and clay.

The uplands in this area are recharge zones for the lower aquifer, and the alluvial plain is a discharge area. Because movement in the artesian aquifer is upward near the site, the water in the unconfined aquifer, if contaminated, will not affect it unless the natural flow is reversed by heavy pumping. There is no drinking-water well within a mile radius of the Western Processing site. The artesian aquifer therefore does not appear to be at risk from the site.

The water-table aquifer, though not a drinking-water source could be at risk from the Western Processing site. Contaminated ground-water leaving the site could affect surface-water quality in the general area.

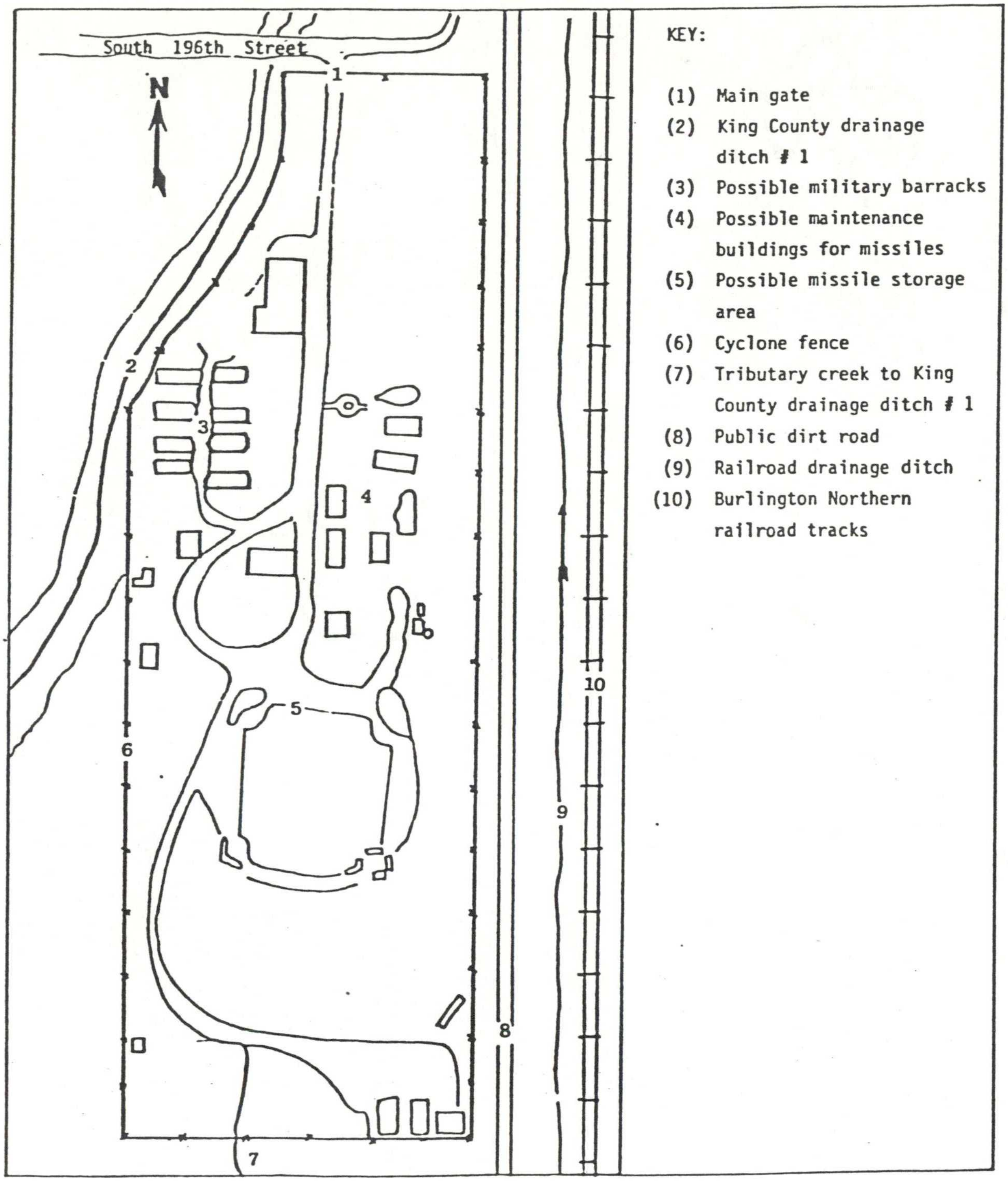
3.0 DISPOSAL PRACTICES

3.1 SITE HISTORY

3.1.1 Site Activities (1957-1980)

Western Processing Company, Inc., began operations at its present location in May 1957 as an animal blood by-product/brewer's yeast reprocessor (EPA, 1982; Kristofferson, 1982). The 13-acre site has been modified over the years to to handle heavy metal recovery, flue dust reclamation, waste solvent recovery; acid and caustic neutralization, and a number of chemical recombination reaction products especially for the production of zinc chloride and lead chromate. The most recent operation is a fertilizer production unit which pellitizes reclaimed ferrous sulfate to be used as a moss inhibitor (EPA, 1982).

Little is known about the early manufacturing processes, products, and waste disposal practices of the company. The site is alleged to have been a former Department of Defense (DOD) Nike Missile base that was purchased from the government by Western Processing, (Sceva, 1982). When Western Processing began its operations, the site was located in a very sparsely populated area of Kent. The site facility as found in 1960 (see Fig. 3) does suggest that the site may have been part of a military base. The site owner has stated that Western Processing is on a former Nike facility (Sceva, 1982). Supposedly, Nike missiles were delivered by railroad and repaired at this site before going to Nike Missile Base 43 which was located approximately three miles south of South 196th Street (Kristofferson, 1982). There is no official information, however, that substantiates these allegations (Turner, 1982; Clay, 1982).



developed from aerial photograph

scale: 1" = 200'

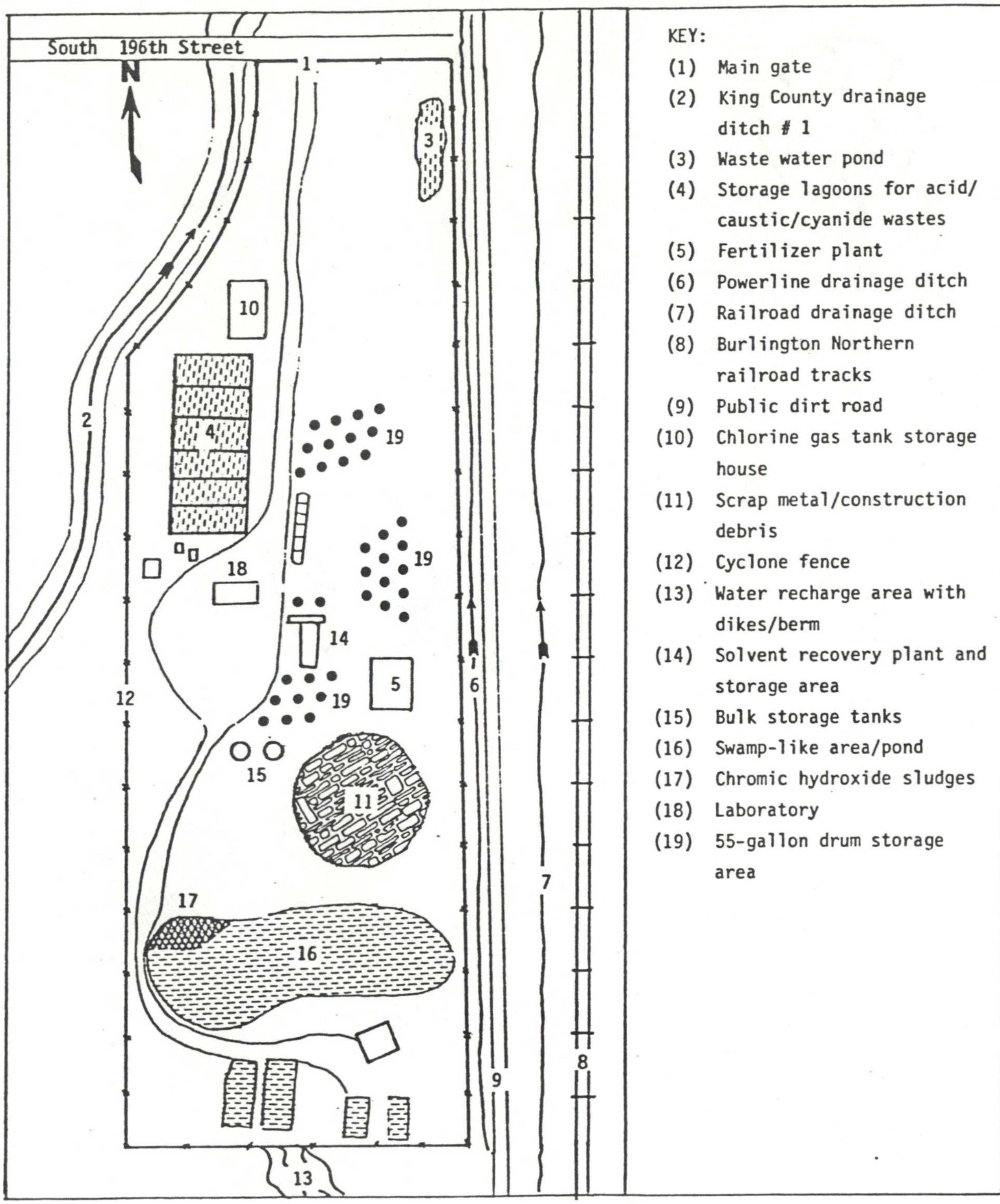
FIGURE 3
SITE PLAN (1960)
WESTERN PROCESSING COMPANY, INC.

A title search indicates that in August 1940, the property that now belongs to Western Processing was owned by a L. J. Costello and Carries. Western Proccesing acquired the land from Costello in September 1961; at that time, Garmt Nieuwenhuis was president of the company (Budnick, 1982). Possibly DOD leased this property from Costello but no record of such a lease exists. The layout of Western Processing in 1960 is suggestive of the military. There appears to be a grouping of barracks and/or maintenance buildings in the northern end of the site with some kind of "bunker area" in the site's southern end (see Fig. 3). A small creek which entered the southwest corner of the facility eventually drained into King County drainage ditch 1 (Brenner, 1982). A chain-link fence surrounded the site.

During the early 1960's, Western Processing began to expand its operational base to include the following treatment and disposal processes: acid, caustic, and contaminated waste water neutralization, electrolytic destruction of cyanides, oil recovery of oily waste water, the distillation of drummed waste (i.e., oil, solvents, sludge), and the controlled burial of containerized paints, sealants, asbestos, polychlorinated biphenyls, and laboratory chemicals and chemical wastes (it is unknown where these wastes were buried) (DOE, 1982). Much of the materials received at Western Processing were recycled for use as agricultural chemicals, fire retardant products, and resalable reclaimed solvents (DOE, 1982). Some of the companies contributing "raw materials" to Western Processing at this time were: Hytec, Inc., (formerly Heath Techna Corporation, Plating Division)--spent plating bath solutions; Pittsburg and Midway Coal Mining Company--dried mineral residue; American Can Company--cyanide wastes; Continental Can Company--waste oil; Crosby and Overton--insecticides; Tree Island Steel Company--spent pickle liquor; and Economic Laboratory--waste chemicals (DOE, 1982).

From approximately 1965 to 1977, Western Processing contracted with the Boeing Aircraft Company, Seattle, Washington, to handle and treat hazardous waste materials from Boeing's many satelite facilities (DOE, 1982 EPA, 1982). Specifically, Western Processing handled acids, all caustics, waste oil, spent halogenated solvents used in degreasing operations, waste chemicals, cyanides, sludges, and phenols that were generated by Boeing's metal finishing, painting, and laboratory operations (DOE, 1982; EPA, 1982; METRO, 1982). While contracted with Boeing, Western Processing undertook steps to improve the overall condition of its facility with possible financial backing from Boeing (EPA, 1982). Some of these facility improvements were to have included the sealing off of some waste storage ponds, minimal sampling of the ground-water to check for facility-related contaminants, and a monitoring system for the disposal of the waste stream going to the Municipality of Metropolitan Seattle's (METRO) sewage system (DOE, 1982). With this in mind, Western Processing, in 1971, contracted with the consulting firm of Bouillon, Christofferson, and Schairer to develop a pollution control plan for the company. The resultant plan addressed changes that would have improved the processing of Western Processing's recoverable waste stream as well as providing for spills control and the collection of storm water that previously had run off-site (METRO, 1982). Due to a cash flow problem, however, Western Processing never implemented the completed plan although they may have instituted minimal changes in their operations to collect and treat waste storm water.

Because of Western Processings association with Boeing, the facility expanded from its early animal blood reprocessing operations. By 1968 (see Fig. 4) the physical layout of the site was very similar to what it is today (see Sec. 2.1). A small waste lagoon was located in the northeast corner of



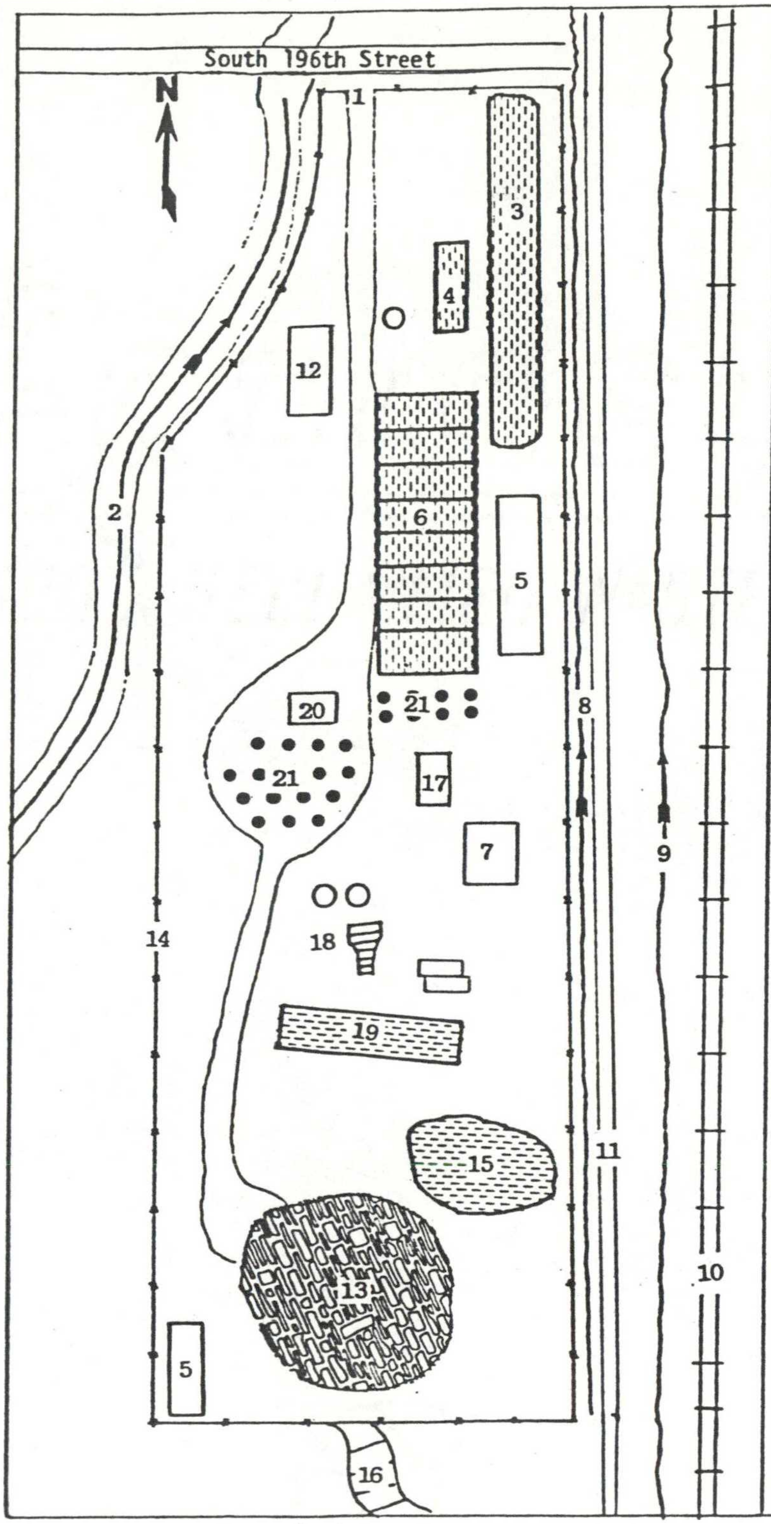
developed from aerial photograph

scale: 1" = 200'

FIGURE 4
SITE PLAN (1968)
WESTERN PROCESSING COMPANY, INC.

the site. The company's zinc sulfate process operation was located in the southeast corner of the site; the Boeing Company's chromic sludges were also treated in this general area (METRO, 1982). Apparently there was a ground depression in the southern part of the site which filled with water whenever it rained creating a swamp area or pond. Chromic hydroxide sludges were dumped near the pond (Kent Fire Department, 1982). By 1968, the stream that flowed along Western Processing's southern border was bermed and diked creating a water recharge area (Sceva, 1982).

By 1974, the site layout changed again with the shift of the waste storage lagoons from the west to the east side of the facility (see Fig. 5). These above-ground lagoons consisted of large cement blocks lined with a membrane liner. The northeast waste pond or lagoon had been greatly enlarged. A memo from A. L. Poole of METRO to G. D. Farris of the Washington Water Pollution Control Commission (METRO, 1982) suggests that this lagoon, estimated to be about 30 feet by 600 feet by 12 feet deep, contained about 2 million gallons of industrial waste of unknown concentration. Because of its greenish color, it was thought that the waste pond contained chromium wastes. Another METRO memo states that there was a considerable amount of floating oil present at the north end of the lagoon and that the bottom of the lagoon and powerline right-of-way drainage ditch contained "an abundance of precipitated solids quite possibly heavy metals including iron" (METRO, 1982). The swamp area or pond was smaller in 1974 than in 1968. It is believed that Western Processing was filling the pond with construction debris. It is not known where the chromic hydroxide sludges which were on the pond's bank, were taken. In 1975, Western Processing contemplated expanding their facility onto an 18-acre site lying south of the existing 13-acres that the company occupied.



KEY:

(1) Main gate
(2) King County drainage ditch # 1
(3) Waste water pond
(4) Storm water pond
(5) Empty storage lagoons
(6) Storage lagoons for acid/caustic/cyanide wastes
(7) Fertilizer plant
(8) Powerline drainage ditch
(9) Railroad drainage ditch
(10) Burlington Northern Railroad tracks
(11) Public dirt road
(12) Chlorine gas tank storage house
(13) Scrap metal/construction debris
(14) Cyclone fence
(15) Swamp-like area/pond
(16) Water recharge area with dikes/berm
(17) Solvent recovery plant and storage area
(18) Bulk storage tanks
(19) Cooling water lagoons
(20) Laboratory
(21) 55-gallon drum storage area

developed from aerial photograph

scale: 1" = 200'

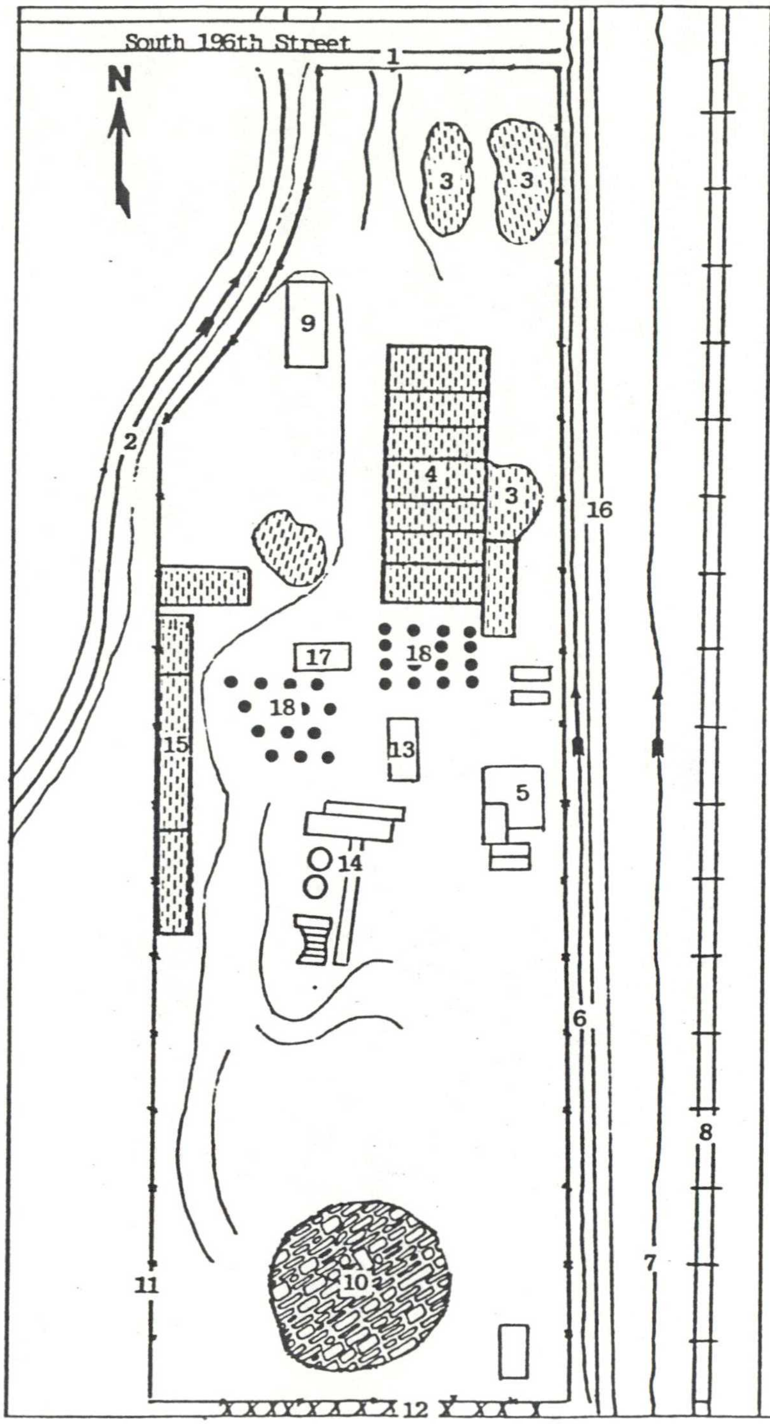
FIGURE 5
SITE PLAN (1974)
WESTERN PROCESSING COMPANY, INC.

Expansion approval was never granted, however, possibly due to the anticipated additional hazards to the environment that new operations might pose (Seattle-King County, 1982).

As the business of waste recovery and recycling increased for Western Processing, local regulatory agencies became concerned with the company's operations, particularly with the fact that waste materials that could contaminate local surface and ground-water sources were scattered about the site. Companies dealing with Western Processing also were becoming concerned with its operations;they began to look for other treatment and disposal outlets for their chemical wastes. In 1977, the Boeing Company, which was Western Processing's largest customer, did not renew its contract and instead contracted with Chemical Processor, Inc., of Seattle. It is believed that Western Processing temporarily ceased operations with the loss of the Boeing contract (Thompson, 1982).

Western Processing waste materials reclamation operations continued after 1977 but at a much reduced scale. The company has recently begun a new operation of obtaining heavy metals by using a chitin extraction process from shrimp exoskeletons (EPA, 1982). This operation is located in the fertilizer plant.

Little is known of the company's waste disposal practices from 1977 to the present. Western Proces- sing again modified its site by removing the lagoon that was located along the northeast site boundary (see Fig. 6). The lagoon was drained and the precipitated material may have been buried there (McCormic, 1982; Conroy, 1982). The cooling water storage lagoons have been moved from the drum storage area to the western property boundary. This water is used



KEY:

(1) Main gate
(2) King County drainage ditch # 1
(3) Waste water/storm water storage ponds
(4) Storage lagoons for acid/caustic/cyanide wastes
(5) Fertilizer plant
(6) Powerline drainage ditch
(7) Railroad drainage ditch
(8) Burlington Northern Railroad tracks
(9) Chlorine gas tank storage house
(10) Scrap metal/construction debris
(11) Cyclone fence
(12) Water recharge area with dikes/berm
(13) Solvent recovery plant with storage area
(14) Bulk storage tanks
(15) Cooling water lagoons
(16) Public jogging track
(17) Laboratory
(18) 55-gallon drum storage area

developed from aerial photograph

scale: 1" = 200'

FIGURE 6
SITE PLAN (1977)
WESTERN PROCESSING COMPANY, INC.

primarily for the solvent reclamation process. The swamp area or pond has been completely filled in (Sceva, 1982).

3.1.2 Site Activities (1980 to present)

Western Processing Company, Inc., is an active reclaimer and reprocessor of hazardous waste materials. The company has received Interim Status under the Resource Conservation and Recovery Act (RCRA) of 1976 as a storage facility for hazardous materials. Under Interim Status, the company is not authorized to treat materials in ways which do not constitute recycling or reclamation (Dawson, 1982). In additon to waste solvent recovery, the company also manufactures fire retardent chemicals, micro-nutrient fertilizer ingredients, non- fertilizer agricultural chemicals, paints, and paint pigments, and solvents. Garmt Nieuwenhuis still ownes Western Processing with (b) (6) [redacted] Luurt as the President. There is no vice-president. E. B. Nieuwenhuis is the company secretary/ treasurer. The current mailing address is 7215 South 196th Street, Kent, Washington 98301 (Washington State, 1982).

3.2 WASTE STREAM

According to the company waste material that has been and is still being generated by Western Processing are still-bottom wastes from their solvent recovery operations. About one wheelbarrel a month of this waste has been generated and stored on-site (Thompson, 1982; EPA, 1982). The company is attempting to get its still-bottom wastes delisted from the RCRA list of hazardous waste from non-specific sources (EPA, 1982).

As Western Processing claims that it recycles and re-sells everything else, it is difficult to assess other "wastes" produced at this facility. Based on the processes used by the company, however, one may predict the types of waste materials present at the site, these would include: waste solvent spills, flue dust, heavy metal sludges, pickle liquors, waste acid and caustic spills from their above-ground storage lagoons, naphtha spills, paint sludges, waste process water used in the distillation process, sanitary waste water and surface runoff water, and waste oil spills.

It is not known whether Western Processing ever sent any waste materials to Arlington, Oregon, an approved hazardous materials storage facility (Thompson, 1982).

4.0 PREVIOUS ANALYTICAL RESULTS

Analytical results of surface water samples collected both by METRO and the DOE (see Fig. 7) are presented in Tables 1 and 2.

METRO's analytical results clearly show high concentrations of heavy metals downgradient from the site (Table 1). For example, the zinc content of the downstream sample is more than 87 times higher than the upstream sample.

The DOE's analytical results (Table 2) show a general increase in specific conductance, chemical oxygen demand (COD), chloride, sulfate and total solids down stream from the site.

While there is no pronounced difference in heavy metals concentrations between upstream and downstream DOE samples, there appears to be a general increase in concentration downstream. Sample number 4 has a high pH of 11.3. This could be a leachate or spill.

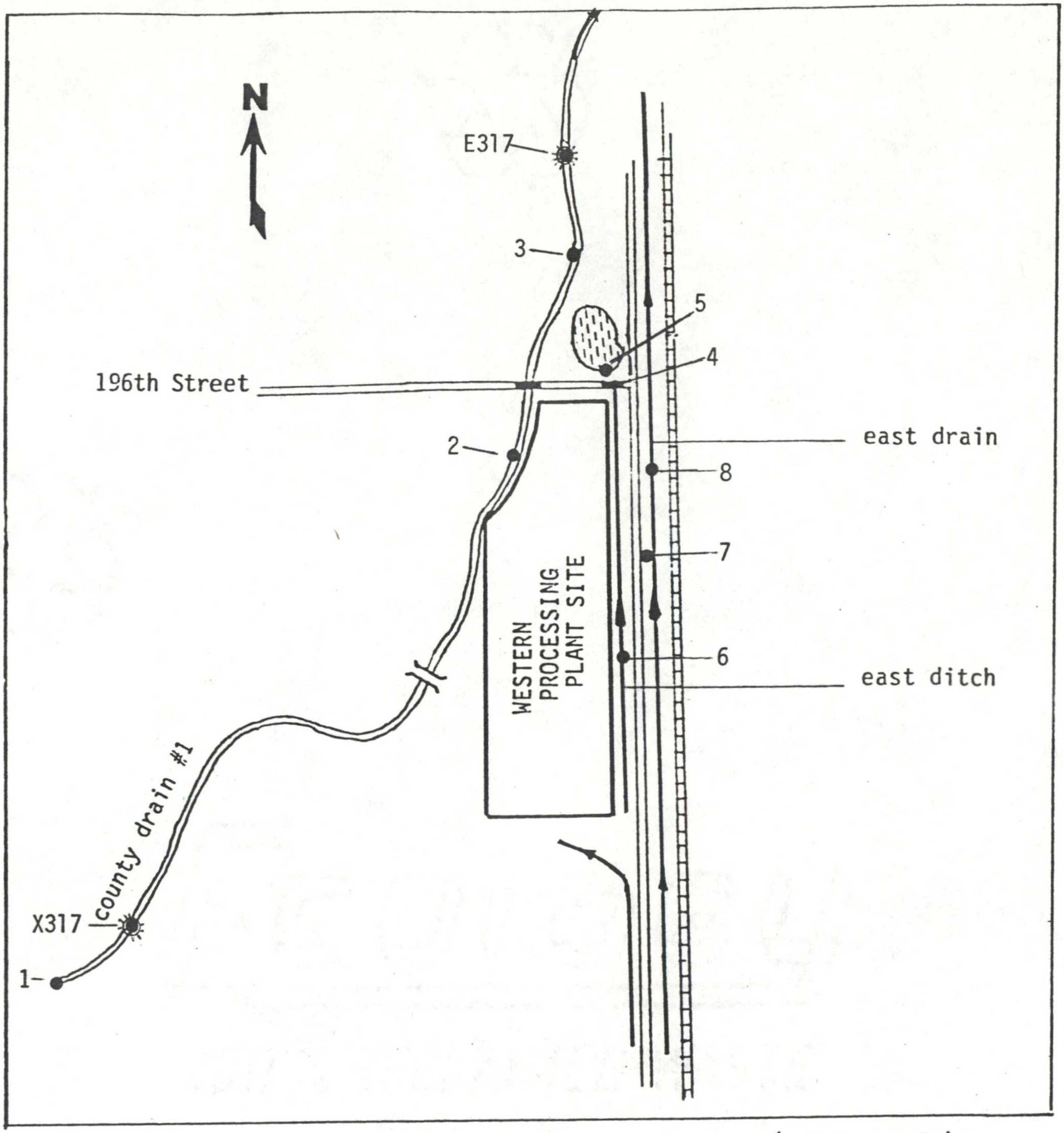
TABLE 1
ANALYTICAL RESULTS OF SAMPLES
COLLECTED BY METRO - JUNE 11, 1981
(All Values in ppb)

	Sample Locations		
Heavy Metals	Upstream X317	Downstream E317	Difference E317-X317
Cadmium	6	61	55
Chromium	20	40	20
Copper	10	30	20
Iron	6540	8040	1500
Nickel	<20	140	>120
Lead	<20	<20	0
Zinc	42	3670	3628

TABLE 2
ANALYTICAL RESULTS OF SAMPLES
COLLECTED BY DOE - MARCH 23, 1982

Analyzed For		1	2	3	4	5	6	7	8
pH *		6.9	6.9	6.3	11.3	6.5	7.1	6.7	6.7
Specific conductance (umhos/cm)		374	393	558	1367	1660	1112	1025	571
COD	mg/l	16	14	61	400	3500	310	180	120
BOD (5 days)	mg/l	---	---	---	---	---	---	---	170
Chloride as Cl	mg/l	43	47	56	47	140	87	90	710
Sulfate - SO_4	mg/l	29	46	150	340	690	370	300	180
Total Solids	mg/l	280	300	1000	460	1500	1100	1000	520
Total Vol. Solids	mg/l	27	33	160	55	350	250	160	150
Total Suspended Solids	mg/l	27	22	48	63	14	75	300	28
Total Vol. Susp. Solids	mg/l	14	11	19	32	13	52	120	18
Heavy Metals (ppb)									
Cadmium		<0.02	<0.02	0.12	0.03	0.41	0.09	0.08	0.04
Chromium		<0.02	<0.02	0.17	0.10	0.08	0.16	0.08	<0.02
Copper		<0.02	<0.02	0.32	0.92	0.64	0.13	0.06	<0.02
Iron		5.60	6.90	6.20	0.70	5.10	2.50	5.00	21.00
Lead		<0.02	<0.02	0.26	0.10	0.60	0.17	0.10	<0.02
Manganese		0.97	1.00	1.90	0.03	5.20	1.90	1.40	2.20
Zinc		<0.02	0.20	16.00	1.40	120.00	18.00	11.00	12.00

*pH of sample collected from Station 3 was taken at 18°C, pH of samples collected from 1 and 2 were taken at 19°C, pH of all other samples were taken at 22°C.



(not-to-scale)

FIGURE 7. PREVIOUS SAMPLING LOCATIONS

Where water ponds when it rains

DOE SAMPLING LOCATIONS

METRO SAMPLING LOCATIONS

5.0 DISCUSSION OF SITE PRACTICES WITH REGARD TO ENVIRONMENTAL REGULATIONS

This section discusses the activities carried out at this site that should be regulated and the permits Western Processing Company, Inc., presently has or should aquire because of its waste-management activities.

5.1 FEDERAL AND STATE CLEAN AIR REGULATIONS AND PERMITS

Western Processing Company, Inc., maintains one boiler and two process heaters for its chemical recovery operations. The steam boiler is used on an unscheduled basis for heating chemical holding tanks and for steam cleaning drums and tanker trucks. The steam boiler burns miscellaneous fuel oils, waste jet aircraft fuel, waste oil, waste solvents and some still-bottoms for their heating values (Thompson, 1982). Likewise, the two process heaters, a Ray Burner (rotary cup) and a Hev-e-oil atomizing burner, burn waste solvents, ketone, acetone, Stoddard solvents and still-bottoms (Thompson, 1982). The waste solvents are received mainly from Washington and Oregon. Oil filled heat exchangers transfer boiler heat to the still columns. Air pollutant emissions from boilers are a cause of concern for government agencies.

In 1963, the United States Congress passed the Clean Air Act to protect the quality of air by research, demonstration and the testing of air pollution control measures (EPA, 1979). Enforcement authority for this act remained with the states. Under the Clean Air Act which has been amended over the years, the EPA is required to establish National Emission Standards for Hazardous Air Pollutants (NESHAPs). Their purpose is to limit emissions of certain very hazardous pollutants from specific source categories that have been shown to cause or contribute to an increase in human mortality or to an increase in serious irreversible or incapacitating reversible illnesses (EPA, 1979).

The current NESHAPs pertain to asbestos, beryllium, mercury, and vinyl chloride; additional air pollutants under study are arsenic, benzene, coke oven emissions, lead, and cadmium (EPA, 1979).

In the State of Washington, west of the Cascade Mountains, the Puget Sound Air Pollution Control Agency (PSAPCA) has been delegated by the Washington State Department of Ecology as the authority to enforce the federal NESHAPs. At this time, PSAPCA has adopted and is enforcing the standards for the hazardous air pollutants asbestos, beryllium, and mercury at the standards for the federally established levels. PSAPCA is concerned with the operation of Western Processing's process heaters and their compliance with the federal regulations. Specifically, PSAPCA is concerned with access to the site (PSAPCA have been refused entry by the company after a plant inspection on April 15, 1981), with an analyses of the fuel oil burned in the boiler and process heaters, with performing source tests on the No. 2 process heater, and with the establishment of compliance status on the No. 1 process heater (Roberts, 1982). Western Processing claims that its process heaters are too small to warrant PSAPCA inspection/regulation.

The Puget Sound Air Pollution Control Agency's other concern is fugitive dust from the flue dust wastes (foundry dust) presently stored on-site. PSAPCA fears that this dust, if allowed to blow around the area, may be inhaled by people using the jogging track adjacent to the eastern property boundary. This dust has a high cadmium and zinc content. PSAPCA currently has a compliance order (Resolution 512) pending against Western Processing (Roberts, 1982).

5.2 FEDERAL AND STATE WATER POLLUTION CONTROL REGULATIONS AND PERMITS

In past years, there has been great concern nationally of the inadvertent and/or illegal discharge of waste water, spill material, and contaminated surface runoff into navigable (i.e., surface) waters. Over the years, Western Processing has claimed that it has never discharged processing wastes or storm water from the site either into the local sewage system or into the county drainage ditch (METRO, 1982).

The original Federal Water Pollution Control Act (FWPCA) was passed by Congress in 1948. The act and its various amendments are often referred to as the Clean Water Act. The Act provided loans for water and waste water treatment plant construction, and for temporary authority for federal control of interstate water pollution. Primary control and enforcement powers were given to the states under the initial direction of the Department of Interior (1948-1956), then the Department of Health, Education and Welfare (1956-1966) and then again to the Department of the Interior (1966-1970).

After the creation of the Environmental Protection Agency (EPA) in 1970, the EPA assumed the responsibility to ensure that United States waterways were fishable and navigable by 1983 and to achieve zero discharge of pollutants by 1985. The states, working with the EPA, established water quality standards in accordance with federal guidelines (EPA

1979). The National Pollution Elimination Discharge System (NPDES) was established as the basic regulatory mechanism for water pollution control whereby the states were given the authority to issue permits to "point source" dischargers provided that the dischargers would comply with source specific effluent limitations, follow toxic regulations, and be liable for oil and hazardous substances spills. State water quality standards are used as a basis for establishing both point source based effluent limitations and toxic pollutant limitations used in issuing NPDES permits to point source dischargers (EPA, 1979).

In Washington, the States's Department of Ecology (DOE) is the NPDES permit issuing agency for dischargers into surface water bodies (DOE, 1955). In 1976, the DOE delegated to the Municipality of Metropolitan Seattle (METRO) the authority to issue waste discharge permits to users that discharge toxic substances into the METRO sanitary sewers (METRO, 1980).

In the past, Western Processing has received three waste discharge permits from the DOE. No METRO permits have ever been issued to Western Processing (Burrow, 1982).

On October 24, 1966, Western Processing received a waste discharge permit (Permit #2625) from the Washington Pollution Control Commission (incorporated into DOE in 1970) to discharge up to 50,000 gallons per day of treatment process water into King County drainage ditch #1. The permit expired on October 24, 1971, with no apparent extention or renewal (METRO, 1982).

Western Processing received another waste discharge permit (Permit #T-3988) on February 28, 1972, allowing it to discharge up to 50,000 gallons per day of treated waste water and storm water into the ground-water from a septic tank located in the center of their property (METRO, 1982). While this permit was in effect, Western Processing was supposed to connect up to the sanitary sewer using the plans of their consulting firm of Bouillon, Christofferson, and Shairer. The water to be discharged was supposed to pass through a series of holding lagoons and a sand filter bed. The City of Kent approved of Western Processing's plans to connect to the sanitary sewage system with the additional requirement that an inside drop connection be made at the City of Kent manhole to which Western Processing's sewer line was to be connected (DOE, 1982). [During a 1981 inspection of the area, however, the City of Kent discovered an unauthorized sewer connection and drop line that had been installed between the manhole immediately south of the city's sewer box and the northernmost manhole on 72nd Avenue South. The pipe used in the connection was not code, that is, it was 1.5-inch diameter instead of 8.0-inch diameter. There was no recent evidence of discharges by Western Processing into either manhole (Burrow, 1982).] This permit expired on December 31, 1972, though Western Processing claims the permit is still valid; it is not (METRO, 1982).

The company's third waste discharge permit (Permit #5151) was issued by DOE on June 3, 1976. The permit allowed Western Processing to discharge up to 50,000 gallons per day of storm water and treated water into the sanitary sewer system. Review of METRO files, however, showed that Western Processing never sent DOE any monitoring results per the discharge permit's special conditions (METRO, 1982). It is not clear whether Western Processing ever discharged into the METRO sewer system under the permit. This permit was to expire in June 1981. Both the Department of Ecology, and the Municipality of Metropolitan Seattle have requested that Western Processing renew its discharge permit especially in light of the fact that the company, in February 1982, requested a permit change to cover the disposal of large quantities of water (up to 9.8 million gallons of storm water on one occasion) due to heavy rainfall. The company responded by only requesting a renewal of its current permit (Permit #5151) and did not apply for a new discharge permit.

Presently, Western Processing has neither a DOE issued NPDES permit to discharge into surface water nor a METRO discharge permit to discharge into the METRO sewage system. The company is negotiating with DOE and METRO for appropriate NPDES permits.

5.3 FEDERAL AND STATE HAZARDOUS MATERIALS REGULATIONS AND PERMITS

The most comprehensive act affecting Western Processing Company, Inc., is the Resource Conservation and Recovery Act (RCRA) of 1976 with its concept to develop and maintain a cradle-to-grave approach in the management of hazardous materials (EPA, 1979). This act provides for the protection of the public health and welfare by supplying guidelines to protect the quality of ground-water, surface water, and the ambient air from contamination by solid wastes. The EPA, as the RCRA regulatory agency, is developing regulations for the safe disposal of hazardous materials. Individual states eventually will be required to promulgate their own waste regulations to implement federal guidelines (EPA, 1979). The Washington State Department of Ecology is working towards receiving authorization from EPA of its own waste regulations (WAC 173-303); primacy is expected in August 1982.

Waste materials that are ignitable, corrosive, reactive, or toxic and/or meet the characteristics of the EP toxicity test are considered hazardous (GPO, 1980). Generators producing sufficient quantities (>100kg) per month of hazardous materials are responsible for their proper disposal.

Western Processing Company, Inc., is an active reclaimer and reprocessor of hazardous waste materials (Thompson, 1982). As such, the company submitted a Notification Form and a Part A permit application as required under Section 3010 of RCRA pertaining to notification of hazardous waste activity. The company has received a RCRA Interim Status Standard (ISS) as a storer of hazardous materials for the specific and non-specific wastes handled by Western Processing. Interim Status, used as a "grandfather" clause, is the status given to facilities that were in operation prior to the formulation of the RCRA regulations in November 1980. Interim Status allows these facilities to continue operations provided that they comply with RCRA regulations in 40 CFR Part 265.1 (GPO, 1980).

Prior to March 1981, Western Processing submitted a notification but claimed exemption from the RCRA regulations under 40 CFR Part 261.6 as they were a recycling and reclamation facility. After March 1981, the EPA conducted an Interim Status Standards Compliance Inspection of the site and the company agreed at this time that the regulations were applicable to their facility (Thompson, 1982).

While operating under interim status, Western Processing may also accept and store EPA listed hazardous wastes (D001-D017) if these wastes, and those listed in their application form, ultimately will be recycled, reused, or reclaimed (Dawson, 1982). The company cannot do the following unless it revises its present interim status standard application: Western Processing cannot store non-ISS listed hazardous materials; Western Processing cannot store its wastes prior to disposal without first recycling, reusing, or reclaiming them; Western Processing cannot dispose of hazardous materials, such as still-bottom wastes, on their property; Western Processing cannot transport hazardous materials to another facility unless the wastes have been recycled, reused, or reclaimed; and Western Processing cannot treat hazardous materials for disposal unless such wastes are a by-product of recycling, reusing, or reclaiming processes. The company was recently treating waste materials from the Puget Sound Naval Shipyard that contained heavy metals, phenols, and chlorinated solvents. Western Processing was reclaiming some of the heavy metals but destroying the phenols (not for reuse) and dumping them down the sewer. The company has no authority under interim status to treat these wastes. Since Western Processing does not have any NPDES permits, they should store the treated phenolic waste water (Thompson, 1982).

The company is also negotiating with the EPA to resolve the issues addressed in the RCRA 3008 Compliance and Administrative Penalty Order it received as the result of the March 1981 inspection. The company is currently cooperating with the EPA and the DOE to develop a ground-water monitoring system around its surface impoundments as part of the RCRA requirements. The EPA and DOE are also helping Western Processing resolve some of the company's responsibilities as a RCRA ISS permittee under 40 CFR Part 264.1-264.99 (GPO, 1980). It is assumed that Western Processing will apply for a RCRA permit when these issues are resolved.

5.4 LOCAL GOVERNMENTAL CONCERNS ABOUT WESTERN PROCESSING

There has been growing concern in the last few years by the Seattle-King County Department of Health and the City of Kent Fire/Building Department about Western Processing's current operations being hazardous to the general public.

The City of Kent Fire Department is responsible for the administration and enforcement of the Uniform Fire Code's Article 19, Section 19.103. Specifically, it is the Fire Department's responsibility to enforce all ordinances and codes relating to the storage, use, and handling of explosive, flammable, toxic, corrosive, and other hazardous gaseous, solid, and liquid materials. Because the fire department has responded to a number of chemical spills at Western Processing in the past, they are very concerned with the company's present operations. The Kent Fire Department feels, however, that the scope of the company's operations may be beyond its capability for acertaining what protective measures should be required at Western Processing to protect the public health. The Kent Fire Department hopes to obtain technical expertise from the Seattle Fire Department, Hazardous Materials Unit, before it will enforce ordinances that would apply to Western Processing (Kent Fire Department, 1982).

The Seattle-King County Department of Health is concerned with both fugitive dust from the flue dust and toxic spills from site operations affecting the employees of Western Processing as well as area residents that may use the jogging path adjacent to the site. The Health Department is working with DOE to decide whether Western Processing must complete the Health Department's application form to obtain a Disposal Site permit as Western Processing runs a resource recovery operation. The DOE initially stated that Western Processing had no "wastes" but only "products" to sell; they are reevaluating this view in light of Western Processing's current operations (Swofford, 1982).

5.5 CURRENT PERMIT STATUS OF WESTERN PROCESSING

Review of current activities of Western Processing with regard to necessary permits reveals the following:

1. Western Processing has Interim Status as a storer of hazardous waste materials as promulgated in the Hazardous Waste Management Regulations under RCRA. If, and when, Western Processing wishes to handle new wastes, treat hazardous wastes for disposal, increase the design capacity of existing processes, or change the ownership/operational control of the facility, Western Processing may revise its interim status application as provided in 40 CFR Sections 122.22 and 122.23.

2. Western Processing currently does not have a Department of Ecology-issued NPDES permit to discharge wastes in surface waters adjacent to the site. It must obtain such a permit for surface water discharge.

3. Western Processing currently does not have a METRO-issued NPDES permit to discharge wastes into the METRO sewage system. It must obtain such a permit for release of wastes into the METRO line.

4. As a resource recovery operation, Western Processing may need to obtain a Seattle-King County Department of Health Disposal Permit pending the outcome of the Department of Ecology/Seattle-King County Department of Health discussions.

6.0 PROBLEM IDENTIFICATION

In order to obtain accurate information on the past and present history of Western Processing Company, Inc., the following questions were addressed to the EPA which planned to contact the site owner. Answers were not available at the time for this report (Thompson, 1982). These questions were identified during the background review of this facility.

1. Describe the water distribution system throughout the facility; include a diagram of the pipe structure system.

2. Describe the chemical composition of water (i.e., waste water, reclamation process water, surface water runoff) being discharged from the facility.

3. Describe any treatment method(s) of water (i.e., waste water, reclamation process water, surface water runoff) before discharge from the facility.

4. List the kinds of water/waste-water impoundments at the facility and their composition; include sludges.

5. Are sludges properly disposed of from these impoundments (i.e., do they go to a permitted waste disposal site?)

6. What are the past waste sludges disposal practices?

7. Are these impoundments ever cleaned? How?

8. How did/does Western Processing dispose of its acid sludges?

9. How did/does Western Processing dispose of its electroplating waste sludges?

10. How did/does Western Processing dispose of its waste paint sludges?

11. How did/does Western Processing dispose of oily waste water? If waste oil is collected, what is it used for?

12. Did Western Processing dispose of any waste chemicals with waste oil/bunker fuel oil and burn it in the solvent distillation boilers as a fuel source?

13. Describe the solvent reclamation process, the products from waste solvent reclamation proccess, the British Thermal Unit (BTU) capacity of the boiler(s).

14. How did/does Western Processing dispose of the sludge residue from the solvent reclamation process?

15. How long was the solvent reclamation process in use; is it still used?

16. How were/are reclaimed solvents labelled for resale: cleanup/wash solvents?

17. Does Western Processing treat the sludge residue from the solvent reclamation process for heavy metals contamination?

18. How did/does Western Processing handle small quantities of reagents and miscellaneous compounds, debris from repair/maintenance of equipment contaminated with hazardous materials, polychlorinated byphenyls, carcinogenic materials, highly toxic materials (such as processes involving beryllium), and asbestos.

19. Have wastes such as drums, piles, and sludges ever been buried on-site?

20. What type of records on waste handling, materials storage, and raw materials inventory does Western Processing maintain?

21. Who did/does Western Processing sell its "product(s)" to?

22. Reclaimed solvents--acetone, chlorinated solvents, freons--were these sold primarily as wash solvents?

23. Did Western Processing sell any light petroleum products, synthetic hydraulic oil, or dark waste oil collected from its oily waste water treatment process? Were these types of oil burned as fuel oil?

24. What are high boiling-point solvents products from the solvent reclamation process used for?

25. How does Western Processing handle paint pigments?

26. Has site area been filled in above its original elevation? If yes, with what?

27. Who did Western Processing purchase their property from when it began operations.

7.0 METHODS FOR SITE INVESTIGATION

In order to ensure that Federal, State and local regulations are complied with, the following data aquisition methods were considered.

7.1 SURFACE GEOPHYSICAL METHODS

Surface geophysical or non-destructive techniques such as ground-penetrating radar, magnetics (magnetrometry), electromagnetics (EM), or metal detection are based on changes in electrical properties such as conductivity, and magnetic susceptibility. These changes are caused by physical or chemical differences in the natural and man-made setting. These include buried solids such as solid wastes, drums or metals objects, and liquid materials.

For any geophysical method to be useful, the target object should exhibit electrical or chemical properties which are "distinctly and unequivocally" different than those of the natural surrounding materials (Meidav, 1960).

The Western Processing site has been raised to about 6 feet from its original elevation with demolition debris such as bricks, reinforced concrete, and pieces of metal, which could mask instrument reading and therefore give uninterpretable data. Geophysical techniques are therefore not recommended.

7.2 WELL INSTALLATION

Ground-water monitoring well installation will not only comply with the Resource Conservation and Recovery Act (RCRA), but could also answer questions about past waste disposal practices at the site. Migration of contaminants from the site, if any, could also be determined. Such migration could result in the site's being designated an uncontrolled hazardous waste site.

7.3 SURFACE WATER MONITORING

Surface-water monitoring of ditches and streams upgradient and downgradient of the site would provide evidance of discharges to surface water. This could also indicate if the site is an uncontrolled hazardous waste site.

7.4 AMBIENT-AIR QUALITY

Ambient-air quality at the site should be monitored to comply with the state regulations. This could be done by the Puget Sound Air Pollution Control Agency.

8.0 GROUND-WATER AND SURFACE WATER SAMPLING

Based on available information, it appears that Western Processing Company, Inc., is in violation of RCRA (40 CFR 265.91). Also, recent surface water samples collected by the DOE and METRO show elevated levels of heavy metal, pH, specific conductance, and total solids in the surface water apparently seeping from the site. However, no individual organic compounds were analyzed for.

Therefore, it is recommended that monitoring wells be installed to comply with RCRA. Other shallow wells should be installed to monitor the effect of the past waste disposal practices at the site. Surface water should be collected upgradient and downgradient of the site. This would help to determine if surface water runoff from the site is causing significant adverse environmental affects to the surrounding waterways.

8.1 GROUND-WATER SAMPLING PLAN

Nineteen ground-water monitoring wells should be installed at locations shown on Figure 8. Wells no. 6, 17, 18, and 19 should be installed to monitor the waste lagoons to comply with the State of Washington requirements under RCRA (DOE, 1982). The remaining 15 monitoring wells should be installed around the perimeter of the site.

The Western Processing site has been raised about 6-feet above its original elevation with fill material consisting mainly of demolition debris such as bricks, concrete, pieces of metal, etc. Conventional drilling methods such as cable tool, rotary and augering may be difficult in these materials.

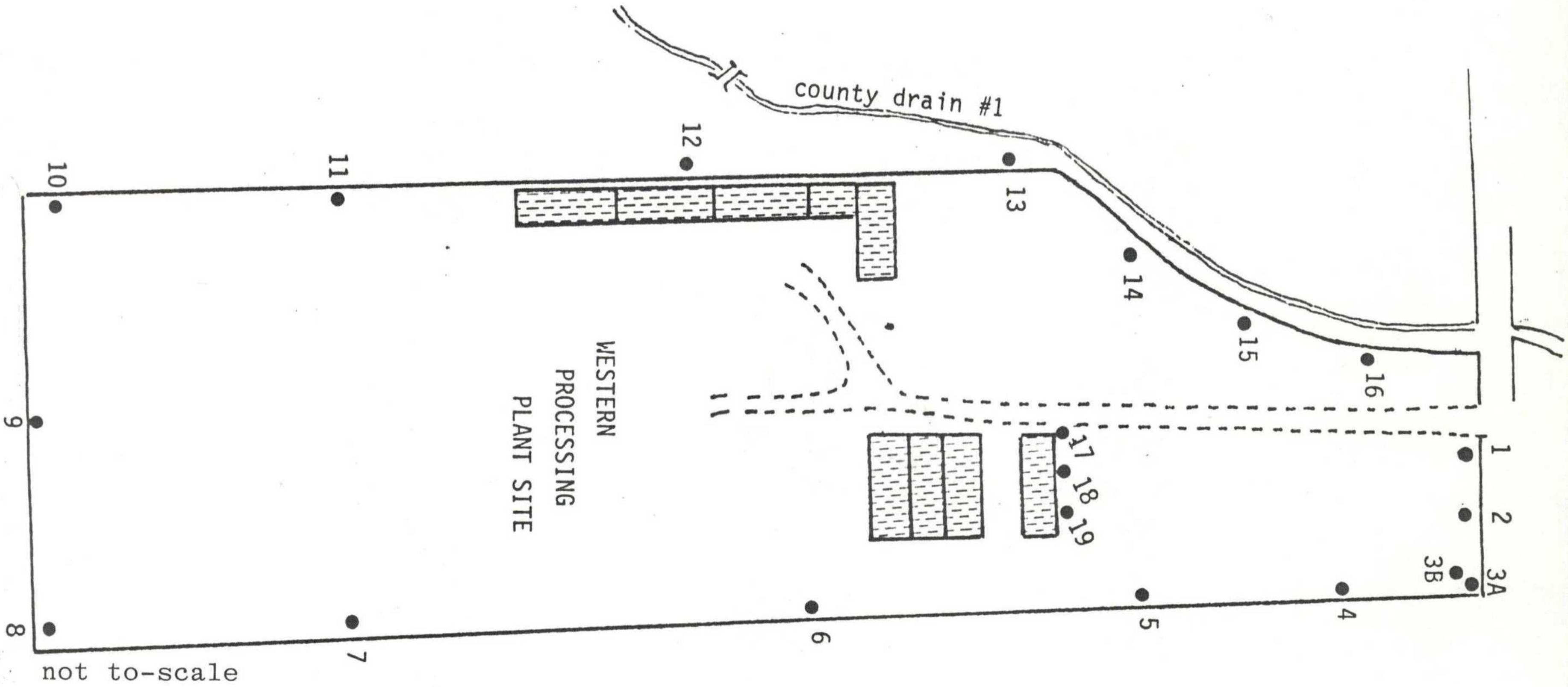


FIGURE 8
PROPOSED MONITORING WELL LOCATIONS
WESTERN PROCESSING COMPANY
KENT, WASHINGTON

Proposed locations of some of the wells may not be accessible to heavy drilling equipment. One kind of well installation technique may therefore not be suitable.

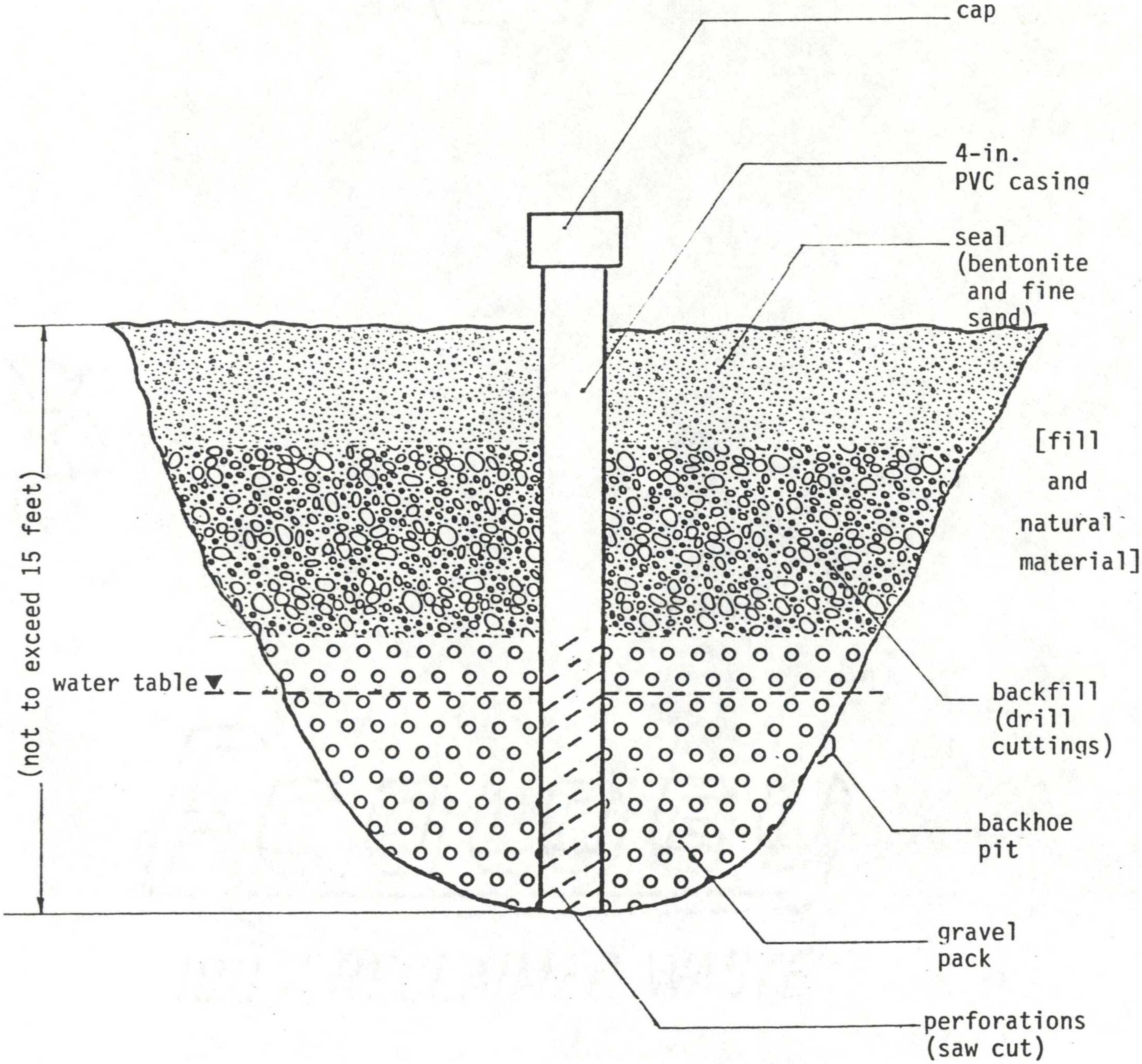
The following well installation techniques are suggested: backhoe, power auger, and cable tool.

8.1.1 Well Installation Using Backhoe

The monitoring well location could be exacavated with a backhoe to about 3-feet below the water table. The total depth of the hole is not expected to exceed 15 feet. A 4-inch PVC casing with saw-cut perforations at the bottom will be installed in the hole. The length of the perforated section of the PVC casing should not exceed 3 feet. The space around the PVC should be filled with uniform pea gravel to a level just above the perforated section (see Fig. 9). The annular space from the top of the gravel pack to about 6-inches below ground elevation should be backfilled with material from the hole. The remaining space should be filled to ground elevation with a mixture of bentonite and fine sand to reduce infiltration from the surface.

8.1.2 Well Installation with a Power Auger

An 8-inch diameter hole could be drilled to about 3-feet below the water level using a motor-driven auger. The depth of the hole is not expected to exceed 15 feet. A 4-inch diameter PVC casing with saw-cut perforations at the bottom should then be installed (see Fig. 10). The perforated section of the PVC may not exceed 3 feet. The annular space from the bottom of the hole to the level of the perforations should be filled with uniform gravel pack. The space from the top of the gravel pack to about 2-feet below ground



(not-to-scale)

Figure 9. Construction of Monitoring Wells Using a Backhoe
Western Processing
(not to-scale)

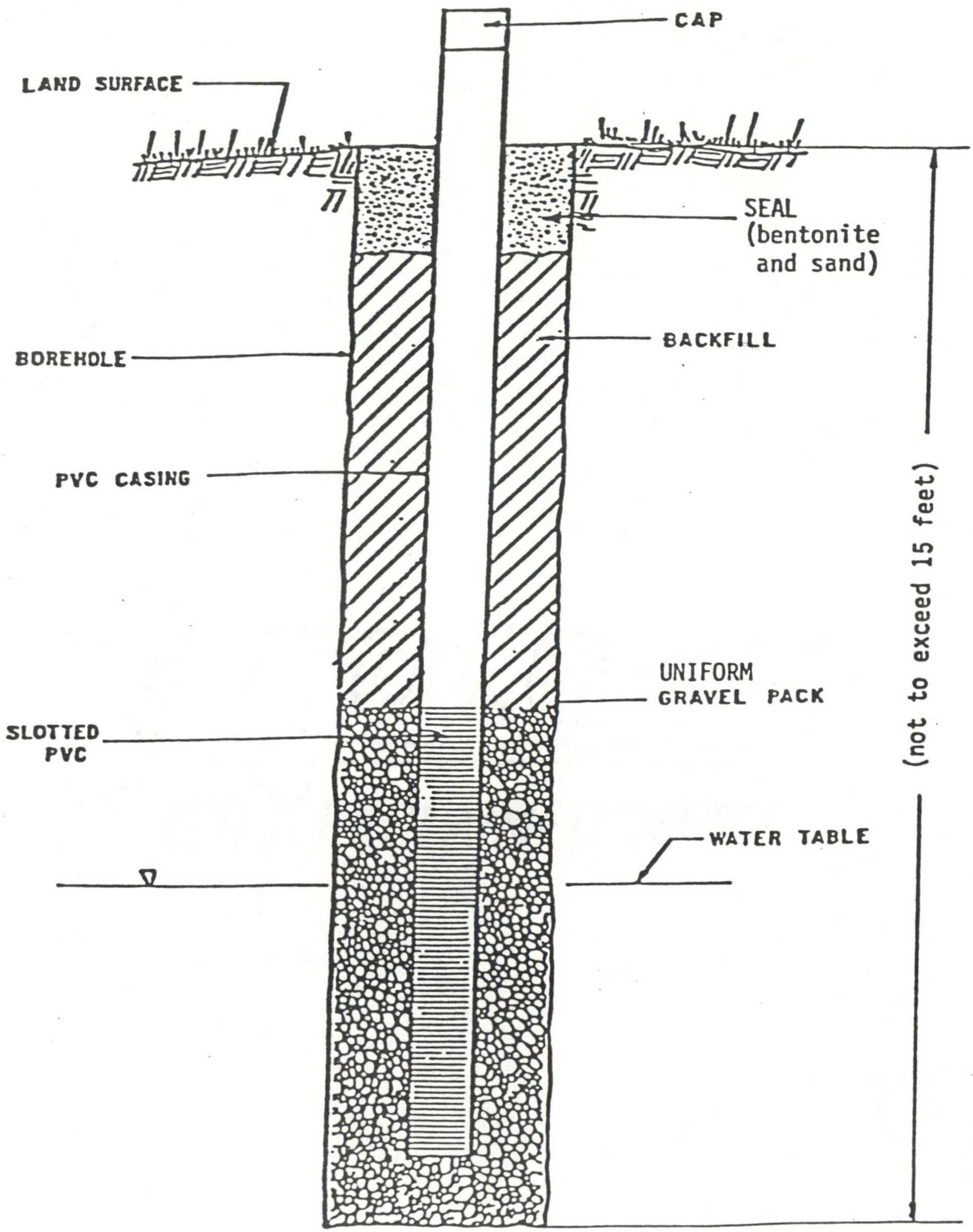


Figure 10. Monitoring Well Construction Using Powered Auger
(not to scale)

elevation should be backfilled with drill cuttings. The annular space from this point to the ground elevation should be filled with a mixture of bentonite and fine sand to reduce infiltration from the surface.

8.1.2 Well Installation with a Cable Tool

Some monitoring wells could be drilled using a cable tool drill rig. The hole will be cased with an unperforated steel casing with a drive shoe. The diameter of the hole should be 8 inches. The depth of the hole is not expected to exceed 15 feet (see Fig. 11).

After the hole has been drilled to the required depth, a 4-inch diameter PVC casing with a zone of perforations at the bottom should be installed inside the 8-inch steel casing. The perforated section will not exceed 3 feet. The annular space between the 8-inch casing and the PVC should be filled with uniform pea gravel. This should be done in a manner that will not cause damage to the PVC casing or cause excessive caving. After filling two feet with gravel, the outer casing should be withdrawn two feet. This step of placing more gravel and withdrawing the outer casing should be repeated once. From this point to about 2 feet below ground elevation should be backfilled with drill cutting. The annular space to ground elevation should often be filled with a mixture of one half bentonite and one half fine sand. The 8-inch outer casing should be withdrawn gradually as described above during placement of backfill and surface seal.

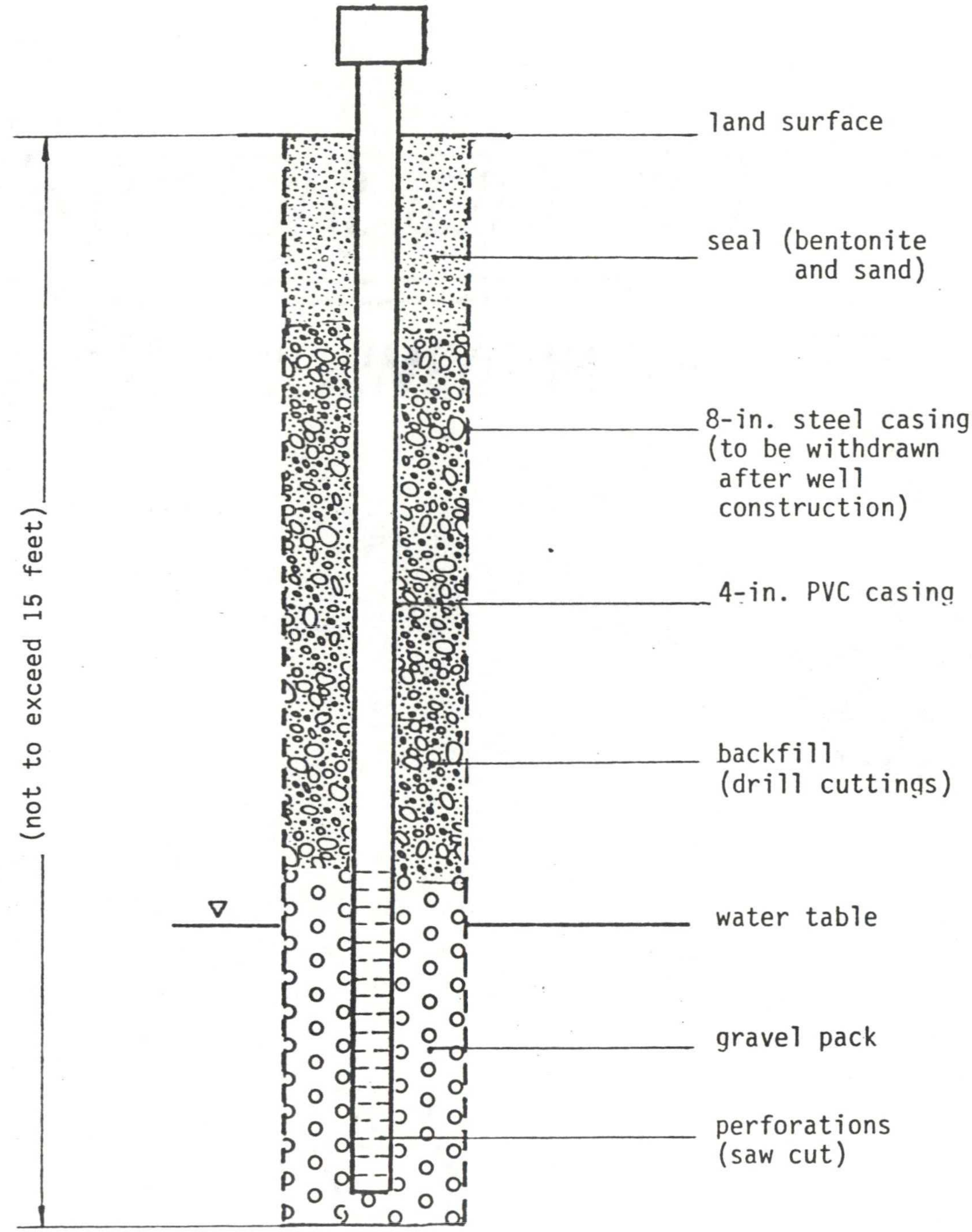


Figure 11. Monitoring Well Construction Using Cable Tool (not to-scale)

8.1 4 <u>Description of proposed Monitoring Well Locations</u> (see Fig. 8)

1	132' W and 5' S from NE corner of site and 5' S and 7' E from eastern gate post at main gate.
2	66' W and 8' S from NE corner of site.
3A	5' W and 5' S from NE corner of site. As access is restricted, an alternate site (3B) was also located.
3B	20' W and 15' S from NE corner of site.
4	135' S and 20' W from NE corner of site and due W from a wood power pole outside the fenced area.
5	300' S and 2' W from NE corner of site and due W from steel power pole outside fenced area.
6	600' S and 8' W from NE corner of site at a point just W of gate in perimeter fence.
7	280' N and 2' W from SE corner of site and due W from steel power pole outside fence area.
8	20' W and 3' N from SE corner of site.
9	210' W and 3' N from SE corner of site.
10	28' N and 3' E from SW corner of site.
11	280' N and 3' E from SW corner of site and due W from steel power pole as at site 7.

12 590' N and 400' W from SE corner of site. The site lies 4' W of perimeter fence as the W fence angles slightly to the NE from the SW corner of the site.

13 415' S and 400' W from the NE corner of the site and apx. 40' S from dead maple tree.

14 310' S and 320' W from NE corner of site and apx. 8' E of W fence.

15 210' S and 260' W from NE corner of site and 4' E of W fence.

16 100' S and 225' W from NE corner of site and 3' E of W fence.

17 375' S and 165' W from NE corner of site and 1.5' NW from NW corner of acid pond.

18 370' S and 125' W from NE corner of site.

19 370' S and 90' W from NE corner of site.

8.1.5 Decontamination

All drilling equipment and casings will be steam cleaned before each hole to ensure that contamination is not introduced into any well.

8.1.6 Well Development

The completed wells should be developed by bailing or pumping to insure their utility as monitoring wells. This should be done in a manner that does not cause any undue disturbance of the strata above the water table nor disturb the seal effected around the well casing and thereby reduce the sanitary protection. The development of the wells should continue until the water pumped or bailed from the wells are free of sand. This would be determined by the supervising geologist.

8.1.7 Sampling Procedures

Each monitoring well should be pumped or bailed until at least three times the volume of water originally standing in the well casing has been discharged or the well runs dry (EPA, 1977). The well will then be allowed to recharge, and and the samples will be collected with a cleaned PVC, teflon, or stainless-steel bailer.

The bailer to be used for sampling will be cleaned with distilled water, acetone, and methanol and then dried with grade D breathing air. The bailer will be cleaned before each sampling and lowered into the casings by monofilament line; the line will be changed between each sampling.

8.1.8 Site Safety

The nature of the materials allegedly present at the Western Processing site and their possible off-site migration by way of ground-water may necessitate the use of respiratory protective equipment during well installation work.

Determination of the need for respiratory protection will be made after an initial ambient-air characterization using an Organic Vapor Analyzer (OVA), a Photoionization Analyzer (HNU), an explosimeter, an oxygen meter and drager tubes and thereafter on a location-to-location basis using the OVA, HNU, and drager tubes. Whenever a respiratory hazard is found to exist, Ecology and Environment (E & E) will require the use of an MSA ultratwin mask with a cartridges, or, possibly, the use of a self-contained breathing apparatus, to protect workers from toxics in ambient air.

In the event respiratory protective equipment is required, it will be provided to the subcontractor by E & E, and is to be returned to E & E promptly upon completion of the drilling work. If such equipment is deemed necessary, E & E will conduct a FIT test and training session in the use of the respiratory protective equipment for the subcontractor prior to the beginning of the drilling. Where deemed necessary, the respiratory protective equipment will be required for all drilling and support people, and may also be required for other persons in the area of the drilling operations during well installation. The subcontractor shall have sufficient personnel at the training session, if there is one, to cover any changes or additions to the drilling crew.

Respiratory protective equipment cannot be used by individuals with long sideburns or beards, or by individuals who wear standard eyeglasses or contact lenses. Special eyeglasses that can be worn with the respiratory equipment are available, and can be purchases by the subcontractor at his expense if desired.

Other protective equipment which may be required for this work, and which will be furnished by the subcontractor, include chemically resistant coveralls (Tyvek), Neoprene rubber boots, and Butyl or Nitrile rubber gloves. When work is performed in potentially contaminated areas, as determined by E & E, boots and gloves must be washed with detergent solution and rinsed with water before leaving the work site. E & E will be responsible for personnel decontamination. No subcontractor personnel may leave the site before personnel decontamination as required by E & E.

Waste materials derived from the installation of the wells (i.e., cuttings) will be used to backfill the wells or will be raked over the site. Purged and bailed water will be barreled and will remain at the site until chemical analyses has determined the nature of the hazard posed by this water.

E & E personnel on-site will assume responsibility for safety during drilling operations in potentially hazardous areas. Smoking, eating and drinking will be prohibited while working in contaminated areas and determined by E & E. Subcontractor personnel will agree to these and other safety requirements stipulated by E & E during drilling.

8.2 SURFACE-WATER SAMPLING PLAN

Grab samples would be collected from locations shown on Figure 12. Samples should be collected during runoff events and also during extended dry periods to show the impact of different conditions.

8.2.1 Description of Recommended Surface Water Sampling Locations (see Fig. 12)

Site No.	Location
1	Down stream near the railroad culvert
2	At the mouth of the east drain
3	Between locations 1 & 4 in County drain #1

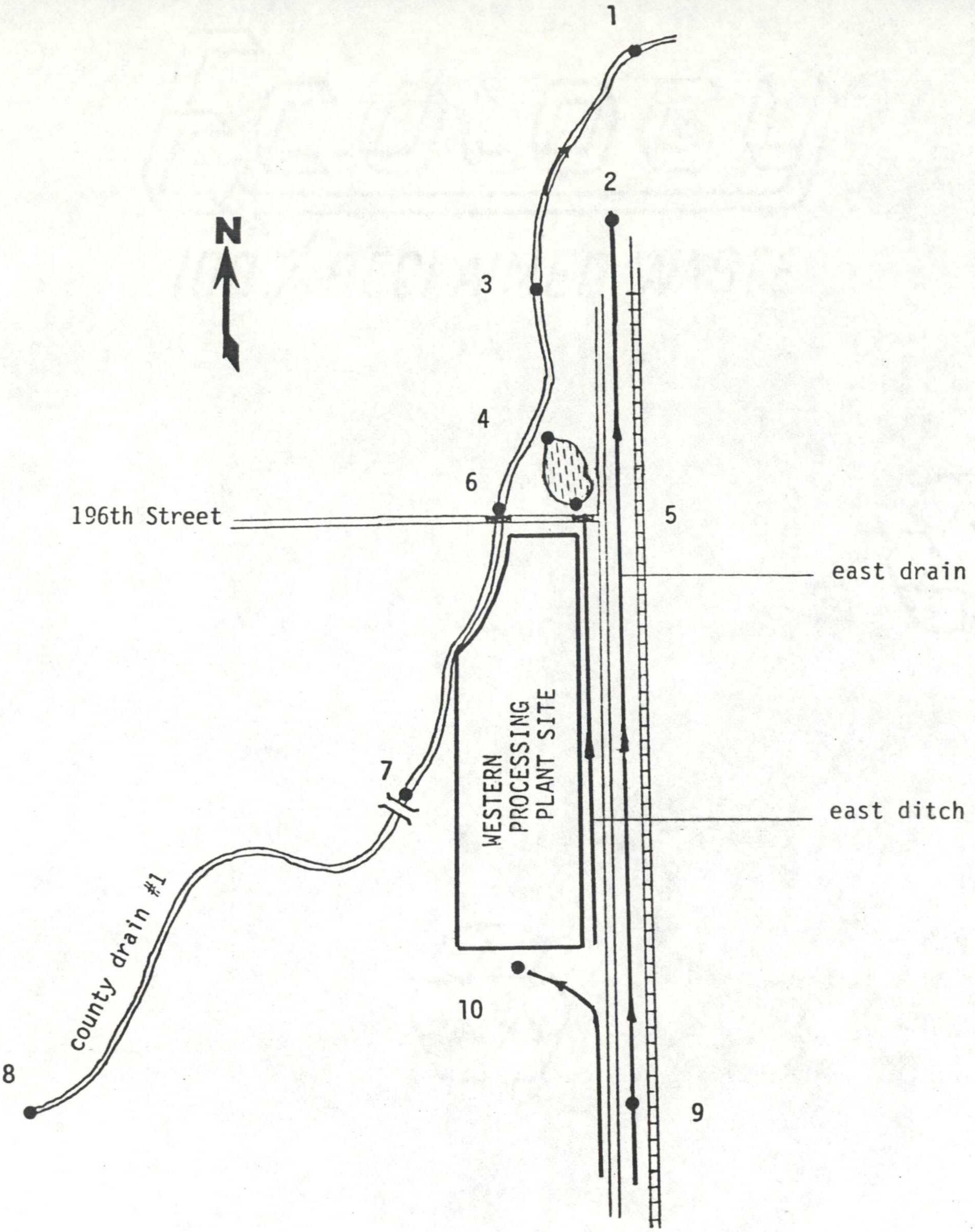


Figure 12. Surface Water Sampling Locations.
(not to scale)

4	Spring
5	East ditch
6	At the intersection of 196th St. & County drain #1
7	About 1/4-mile upstream from 196th St.
8	County drain #1 at 204th St.
9	East drain upstream from the site
10	Recharge area.

8.2.2 Site Safety

A site safety plan will be prepared by the FIT Safety Officer and filed with Ecology and Environment's National Program Manager's Office. Determination of the need for respiratory protective equipment will be made after an initial ambient-air characterization off and on-site (see Sec. 8.1.8). Modified level D protective clothing (coveralls, safety glasses, hard hats and neoprene boots) will probably be worn. Disposable latex gloves will be worn for taking samples. Gloves will be changed for each sampling.

Decontamination procedures would be as follows:

1. The used disposable latex gloves will be bagged for disposal.

2. The safety clothing will be wiped off before it is returned to the van.

3. Coveralls will be removed and, if soiled, bagged for later cleaning.

4. Sample containers will be cleaned with soap and water before they are placed in the ice chest.

5. Water for cleaning will be brought to the site by the FIT.

8.3 GENERAL REQUIREMENTS FOR SAMPLING

8.3.1 Analytical Requirements

Both surface and ground-water samples should be analyzed for pH, Specific Conductance and Total Organic Carbon (TOC). This information, along with ground-water elevations, could be used to prepare geochemical and geohydrologic analyses for the site for the purpose of designating a specific sampling plan.

8.3.2 Quality Assurance

Four sets of blanks (two sets for ground-water sampling and two sets for surface water sampling) made up of organic-free distilled water should be prepared. The first set of blanks will simply be taken to the site and then sent to the laboratory. The second set of blanks will be taken to the site and transferred into empty containers to determine whether there are contaminants introduced in the field. All samples will be analyzed by the EPA Region X Laboratory.

8.3.3 STORET Assignment

The STORET group at the EPA Environmental Services Division will be contacted prior to sampling. They will assign STORET numbers to the sample locations.

8.3.4 Laboratory Notification

The Environmental Services Division will schedule the analyses arrangements with the contract laboratory. The day before sampling FIT will notify the laboratory of the sample documentation numbers and confirm the number of samples to be shipped and the types of analyses required.

BIBLIOGRAPHY

Brenner, R., 1982, personal communication; Muncipality of Metropolitan Seattle (METRO), Seattle, Washington.

Budnick, A., 1982, personal communication; SAFECO Securities, Inc., Seattle, Washington.

Burrow, B., 1982, personal communications; Municipality of Metropolitan Seattle, (METRO), Seattle, Washington.

City of Kent, Fire Department, 1982, site file: Western Processing Company, Inc., Kent, Washington.

Clay, J., 1982, personal communication; General Services Administration (GSA), Auburn, Washington.

Conroy, J., 1982, personal communication; Washington State Department of Ecology, Redmond, Washington.

Dawson, L., 1982, personal communication; Environmental Protection Agency, Seattle, Washington.

Environmental Protection Agency (EPA), 1982, site files for Western Processing Company, Inc., Region X: Seattle, Washington.

______1979, A handbook of key federal regulations and criteria for multimedia environmental control, EPA-600-7/79-175.

______1977, Procedures manual for ground-water monitoring at solid waste disposal facilities, EPA-530-SW-611.

Kristofferson, R., 1982, personal communication; City of Kent, Washington.

Mullineaux, D. R., 1970, Geology of Renton, Auburn, and Black Diamond Quadrangles, King County, Washington: U.S. Geological Survey Professional Paper 672.

McCormic, R., 1982, personal communication; Washington State Department of Ecology, Redmond, Washington.

Meidav, Tsui, 1960, An electrical resistivity survey for ground-water, Geophysics, vol. 25, no. 5 (October 1960), pp. 1077-1093.

Municipality of Metropolitan Seattle (METRO), 1982, site files for Western Processing Company, Inc., Kent, Washington.

______1980, Regarding the control and disposal of industrial waste into the metropolitan sewage system, Resolution 3374.

Puget Sound Air Pollution Control Agency (PSAPCA), 1982, site files for Western Processing Company, Inc., Kent, Washington.

Roberts, J., 1982, personal communication; Puget Sound Air Pollution Control Agency, Seattle, Washington.

Sceva, J., 1982, personal communication; Environmental Protection Agency, Seattle, Washington.

Swofford, W., 1982, personal communication; Seattle-King County Department of Health, Seattle, Washington.

Thompson, N., 1982, personal communication; Environmental Protection Agency, Seattle, Washington.

Turner, C., 1982, personal communication; U.S. Corps of Engineers, Seattle, Washington.

U.S. Geological Survey (USGS), 1949, (photorev. 1968, 1973), Renton Quadrangle: topographical map, scale 1:24,000.

U.S. Government Printing Office, 1980, Federal register, vol. 45, no. 98, pp. 3306-33259.

Washington State Department of Ecology (DOE), 1982, site files for Western Processing Company, Inc., Kent, Washington.

______1982, Dangerous waste regulations, WAC-173-303-400(3) V.

______1981, General regulations for air pollution sources, WAC-173-400-010 - 173-400-170.

______1955, Water Pollution Control Laws, RCW-90.48-160 Industrial Waste Water.